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(54) [Title of the Invention] E-MAIL PRINTING METHOD, E-
MAIL PRINTING DEVICE, AND RECORDING MEDIUM HAVING E-
MAIL PRINTING PROGRAM RECORDED THEREON

(57) [Abstract]

[Object] To provide an e-mail printing method, an e-mail printing device, and a recording medium having an e-mail printing program recorded thereon, in which e-mail can be printed at any desired time with minimum effect on a mail system and without placing a load on a printer.

[Solving Means] In a device that is connected to a network and that has the function of reading e-mail in accordance with an e-mail reading procedure, a predetermined mail-processing program 11 causes a printer 1 to be connected to an e-mail server 2 in accordance with an e-mail reading procedure (S1) to read e-mail (S2). The e-mail content is printed by a printer engine 12 in accordance with a predetermined format and mode (S3). Therefore, the e-mail

directed to a designated user can automatically be printed depending upon the settings without placing a load on the printer 1, such as storage of the e-mail data into the printer and transfer of the e-mail, and with minimum effect on an e-mail system.

[Claims]

[Claim 1] An e-mail printing method for a device that is connected to a network and that has the function of reading e-mail in accordance with an e-mail reading procedure, said e-mail printing method comprising:

 a connecting step of connecting to an e-mail server based on a predetermined condition;

 a reading step of reading e-mail from the server that is connected in the connecting step; and

 a printing step of printing the content of the e-mail read in the reading step in accordance with a predetermined format and mode.

[Claim 2] An e-mail printing method for a device that is connected to a network and that has the function of reading e-mail in accordance with an e-mail reading procedure and an e-mail server function including storing and providing e-mail, said e-mail printing method comprising:

 a connecting step of connecting to an e-mail server based on a predetermined condition;

 a reading step of reading e-mail from the server that is connected in the connecting step;

 a storing step of storing the e-mail read in the reading step into the device;

 a readout providing step of providing readout, from a client, of the e-mail stored in the storing step; and

a printing step of printing the e-mail content in accordance with a readout status from the client and a predetermined format and mode.

[Claim 3] An e-mail printing method for a device that is connected to a network and that has the function of reading e-mail in accordance with an e-mail reading procedure and an e-mail server function including storing and providing e-mail, said e-mail printing method comprising:

a connecting step of connecting to an e-mail server via the device;

a reading step of reading e-mail from the server that is connected in the connecting step;

a storing step of storing the e-mail read in the reading step into the device,

the device being connected to the server based on the e-mail stored in the storing step and a predetermined condition to read e-mail from the server; and

a printing step of printing the e-mail content in accordance with a predetermined format and mode.

[Claim 4] An e-mail printing method according to any one of claims 1 through 3, wherein a plurality of the e-mail printing methods are used.

[Claim 5] An e-mail printing device that is implemented by using the e-mail printing method according to any one of claims 1 through 4.

[Claim 6] A recording medium having an e-mail printing program recorded thereon, the program causing a computer to execute the e-mail printing method according to any one of claims 1 through 4.

[Detailed Description of the Invention]

[0001]

[Technical Field of the Invention] The present invention relates to an e-mail printing method used in an image forming device or the like that is connected to a network and that prints e-mail, and to an e-mail printing device, and a recording medium having an e-mail printing program recorded thereon.

[0002]

[Description of the Related Arts] In the related art, an e-mail printing method, an e-mail printing device, and a recording medium having an e-mail printing program recorded thereon are generally implemented by connecting to a network.

[0003] Recently, e-mail systems on a computer network have become widespread. In particular, standard mail systems on the Internet are often composed of a server computer serving as a mail server that stores and accumulates mail, and a client computer serving as a client that reads mail. In such systems, the client reads mail in accordance with a predetermined procedure on a network.

[0004] Fig. 4 is a conceptual diagram of a procedure in

Example 1 of the related art. Fig. 4 shows an example of the traditional mail system described above. In Example 1 of the related art shown in Fig. 4, incoming e-mail is received by a mail server, and is stored in the mail server. A mail-reading application on a client computer sends a read request to the mail server (S31), and processes e-mail data that is sent from the mail server (S32).

[0005] Fig. 5 is a conceptual diagram of a procedure of Example 2 of the related art, which is disclosed in Japanese Patent Laid-Open No. 8-305518. In Example 2 of the related art shown in Fig. 5, a printer that prints e-mail at any desired time is implemented by a method of printing mail for a designated user, which is sent to the printer, in accordance with a specified format and mode.

[0006] In this method, the printer receives e-mail and prints designated e-mail from the received e-mail (S41), while transferring other e-mail to another device (S42) or storing it in the printer (S43).

[0007] Thus, it is necessary set the destination of e-mail to printers of users who use this system. Since a printer functions as a server for the e-mail directed to a certain range of users, a heavy load is imposed on the printer, which affects the performance of the printer itself. Moreover, such a non-dedicated mail server device controls the mail system, leading to low reliability as a mail system.

[0008]

[Problems to be Solved by the Invention] However, the examples of the related art described above have problems in that mail storage and transfer performed by a printer impose a load on the printer, and mail storage and transfer performed via the printer lead to low reliability as a mail system.

[0009] The present invention has been made in order to overcome the problems with the related art described above, and it is an object of the present invention to provide an e-mail printing method, an e-mail printing device, and a recording medium having an e-mail printing program recorded thereon, in which e-mail can be efficiently printed at any desired time with minimum effect on the existing mail system and without placing a load on a printer.

[0010]

[Means for Solving the Problems] In order to overcome the foregoing problems, the invention set forth in Claim 1 provides an e-mail printing method for a device that is connected to a network and that has the function of reading e-mail in accordance with an e-mail reading procedure, the e-mail printing method including a connecting step of connecting to an e-mail server based on a predetermined condition, a reading step of reading e-mail from the server that is connected in the connecting step, and a printing

step of printing the content of the e-mail read in the reading step in accordance with a predetermined format and mode.

[0011] The invention set forth in Claim 2 provides an e-mail printing method for a device that is connected to a network and that has the function of reading e-mail in accordance with an e-mail reading procedure and an e-mail server function including storing and providing e-mail, the e-mail printing method including a connecting step of connecting to an e-mail server based on a predetermined condition, a reading step of reading e-mail from the server that is connected in the connecting step, a storing step of storing the e-mail read in the reading step into the device, a readout providing step of providing readout, from a client, of the e-mail stored in the storing step, and a printing step of printing the e-mail content in accordance with a readout status from the client and a predetermined format and mode.

[0012] The invention set forth in Claim 3 provides an e-mail printing method for a device that is connected to a network and that has the function of reading e-mail in accordance with an e-mail reading procedure and an e-mail server function including storing and providing e-mail, the e-mail printing method including a connecting step of connecting to an e-mail server via the device, a reading

step of reading e-mail from the server that is connected in the connecting step, a storing step of storing the e-mail read in the reading step into the device, the device being connected to the server based on the e-mail stored in the storing step and a predetermined condition to read e-mail from the server, and a printing step of printing the e-mail content in accordance with a predetermined format and mode.

[0013] In the invention set forth in Claim 4, in the e-mail printing method set forth in any one of Claims 1 through 3, a plurality of e-mail printing methods are used.

[0014] The invention set forth in Claim 5 provides an e-mail printing device that is implemented by using the e-mail printing method according to any one of Claims 1 through 4.

[0015] The invention set forth in Claim 6 provides a recording medium on which a program for causing a computer to execute the e-mail printing method according to any one of Claims 1 through 4 is recorded.

[0016]

[Embodiments] An e-mail printing method, an e-mail printing device, and a recording medium having an e-mail printing program recorded thereon according to an embodiment of the present invention will now be described in detail with reference to the accompanying drawings. Figs. 1 to 3 show an e-mail printing method, an e-mail printing device, and a recording medium having an e-mail printing program recorded

thereon according to an embodiment of the present invention.

[0017] In this embodiment, a device that controls printing accesses a mail server according to the settings, if necessary, to retrieve and print only the required mail. Moreover, only the required e-mail is stored, and the required e-mail is printed according to the state of the stored e-mail or the state of the e-mail read via the device. This embodiment will be described in the context of a printer.

[0018] Fig. 1 is a conceptual diagram showing the structure of a first embodiment of the present invention. In Fig. 1, e-mail sent from a printer 1 is received by a mail server 2, and is stored in a mail-storage hard disk 21 in the mail server 2. A mail-processing program 11 on the printer 1 sends a read request to the mail server 2 at a time that is defined for each designated user (S1). The printer 1 obtains the e-mail data that is sent from the mail server 2 (S2), and prints the data using a printer engine 12 in accordance with a printing format and mode for each designated user (S3).

[0019] The data may be printed in accordance with the settings so as to be printed in multiple columns using both sides of a specified sheet of paper from a specified output bin. The mail server checks e-mail at predetermined intervals or at a predetermined time.

[0020] For example, once the destination of e-mail that is periodically sent by a mailing list service is registered as a designated user, the mail that is sent to this user can always be printed within a certain period of time. Thus, a print of the e-mail content that is periodically delivered can be automatically obtained.

[0021] This is effective for e-mail content that is suitable for reading in printed form or e-mail that must be preserved in printed form.

[0022] Fig. 2 is a conceptual diagram showing the structure of a second embodiment of the present invention. In Fig. 2, incoming e-mail is received by a mail server, and is first stored in the mail server. A mail-processing program on a printer sends a read request to the mail server at a time that is defined for each designated user (S11). The printer obtains the e-mail data that is sent from the mail server (S12), and stores it in a hard disk of the printer. At this time, e-mail of each designated user is stored in the printer.

[0023] The user uses a standard e-mail application to access the printer (S13, S14) to read mail or delete the e-mail data stored in the printer.

[0024] The state of the e-mail stored in the printer is checked at another predetermined time, and the data is printed in accordance with the printing format and mode

defined for each designated user under the specified conditions, such as the storing period (S15).

[0025] The e-mail that is not read for a certain period of time or the e-mail content that is difficult to read on-line can automatically be printed at a predetermined time. Some mail applications make it possible not to receive long mail messages. With the use of such mail applications, only long mail messages can be printed.

[0026] Depending upon the printer settings, more detailed control is also possible by changing the storage, printing, and operation in response to a read request from a client based on printer attributes such as the mail data size, title, and sender.

[0027] Fig. 3 is a conceptual diagram showing the structure of a third embodiment of the present invention. In Fig. 3, a user uses a standard e-mail application to access a printer (S21, S24) to read mail or to delete e-mail data that is stored in the printer. This access is performed via the printer by a series of operations of actually sending a user request from the mail application (S21) to a mail server (S22), obtaining a result from the mail server by the printer (S23), and returning the result to the mail application of the user (S24).

[0028] In this printer, the access information is stored as a mail access record. This mail access record contains

information such as mail reading and deletion. The mail access records are checked at another predetermined time to retrieve the mail data from the mail server that complies with the predetermined conditions such as the specified storing period (S25, S26). The retrieved mail data is printed in accordance with the printing format and mode defined for each designated user (S27). According to this method, like the second embodiment of the present invention, e-mail can be printed without the mail data stored in the printer.

[0029] Processing according to a fourth embodiment of the present invention will now be described. In order to appropriately use the methods according to the first to third embodiments of the present invention depending upon the environment, settings, and so on, the plurality of methods of Embodiments 1 to 3 are used to print e-mail. More detailed designation is possible depending upon the situation, and e-mail can more appropriately be printed.

[0030] Processing according to a fifth embodiment of the present invention will now be described. The e-mail printing methods of the first to fourth embodiment of the present invention are performed by a printer. Moreover, the e-mail printing device that performs the e-mail printing methods of the first to fourth embodiments is implemented by a computer or a device capable of controlling a printer or a

printing device.

[0031] Processing according to a sixth embodiment of the present invention will now be described. The e-mail printing methods according to the first to fourth embodiments of the present invention are implemented by an e-mail printing program, particularly, a program in a device that operates in a network environment.

[0032]

[Advantages] As is apparent from the foregoing description, according to the invention set forth in Claim 1, the e-mail directed to a designated user can automatically be printed depending upon the settings without placing a load on the printer, such as storage of the e-mail data into the printer and transfer of the e-mail, and with minimum effect on an e-mail system.

[0033] According to the invention set forth in Claim 2, e-mail can be printed under the conditions such as e-mail reading and operation of a user.

[0034] According to the invention set forth in Claim 3, fewer resources on the printer is used.

[0035] According to the invention set forth in Claim 4, the operations set forth in Claims 1 through 3 can be selectively used or are used in combination, thereby appropriately selecting the operation for the processing of the device. The settings can appropriately be determined

for actual usage conditions, such as effective use of the resources of the printer for actual processing and more appropriate and reliable selection.

[Brief Description of the Drawings]

[Fig. 1] Fig. 1 is a conceptual diagram showing the structure of Embodiment 1 of an e-mail printing method, an e-mail printing device, and a recording medium having an e-mail printing procedure recorded thereon according to the present invention.

[Fig. 2] Fig. 2 is a conceptual diagram showing the structure of Embodiment 2 of the present invention.

[Fig. 3] Fig. 3 is a conceptual diagram showing the structure of Embodiment 3 of the present invention.

[Fig. 4] Fig. 4 is a conceptual diagram of a procedure for showing Example 1 of the related art.

[Fig. 5] Fig. 5 is a conceptual diagram of a procedure for showing Example 2 of the related art.

[Reference Numerals]

- 1: printer
- 2: mail server
- 11: mail-processing program
- 12: printer engine
- 21: mail-storage hard disk
- S1: read request process
- S2: e-mail data retrieving process

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S3: data printing process

FIG. 1

A .. COMPUTER NETWORK
1 .. PRINTER
2 .. MAIL SERVER
11 .. MAIL-PROCESSING PROGRAM
12 .. PRINTER ENGINE
21 .. MAIL-STORAGE HARD DISK

FIG. 2

A .. COMPUTER NETWORK
B .. CLIENT PC
C .. MAIL-READING APPLICATION
D .. PRINTER
E .. MAIL-PROCESSING PROGRAM
F .. PRINTER ENGINE
G .. MAIL-STORAGE HARD DISK
H .. MAIL SERVER
I .. MAIL-STORAGE HARD DISK

FIG. 3

A .. COMPUTER NETWORK
B .. CLIENT PC
C .. MAIL-READING APPLICATION
D .. PRINTER
E .. MAIL-PROCESSING PROGRAM 1

F .. MAIL ACCESS RECORD
G .. MAIL-PROCESSING PROGRAM 2
H .. PRINTER ENGINE
I .. MAIL SERVER
J .. MAIL-STORAGE HARD DISK

FIG. 4

A .. COMPUTER NETWORK
B .. CLIENT PC
C .. MAIL-READING APPLICATION
D .. MAIL SERVER
E .. MAIL-STORAGE HARD DISK

FIG. 5

A .. COMPUTER NETWORK
B .. MAIL SERVER
C .. MAIL-STORAGE HARD DISK
D .. PRINTER
E .. MAIL-PROCESSING PROGRAM
F .. MAIL-STORAGE HARD DISK
G .. PRINTER ENGINE

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施例1の構成例を説明するための概要図である。

【図2】本発明の実施例2の構成例を説明するための概要図である。

【図3】本発明の実施例3の構成例を説明するための概要図である。

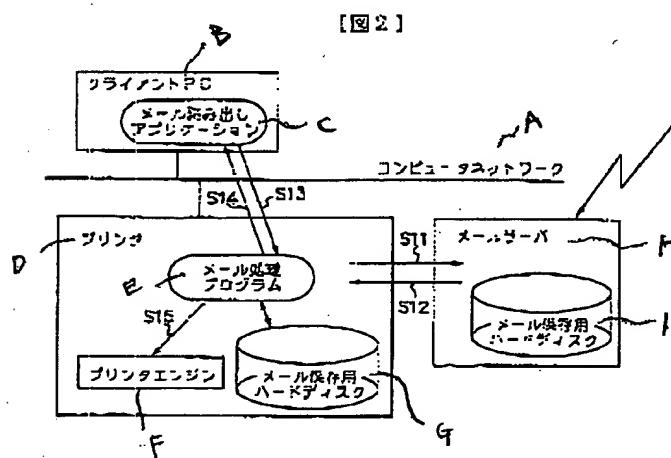
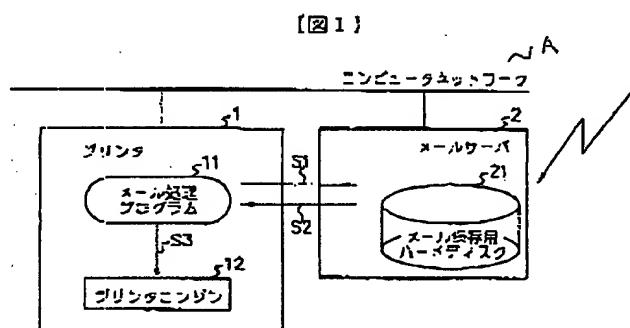
【図4】従来例1を説明するための処理手順例を示す概要図である。

【図5】従来例2を説明するための処理手順例を示す概要図である。

【符号の説明】

*10

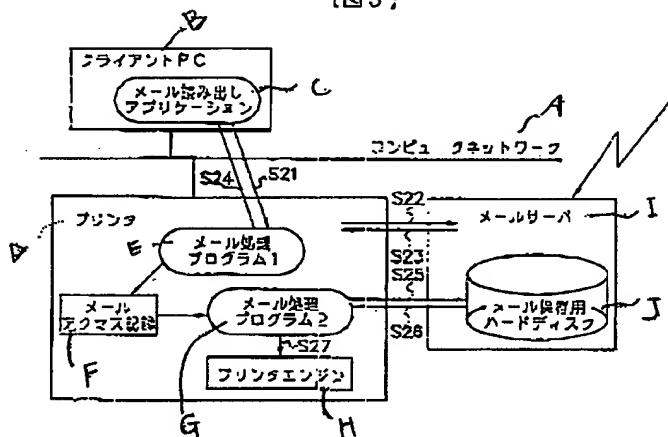
- *1 プリンタ
- 2 メールサーバ
- 11 メール処理プログラム
- 12 プリンタエンジン
- 21 メール保存用ハードディスク
- S1 読み出しの要求処理
- S2 電子メールのデータの取得処理
- S3 チュタの印刷処理



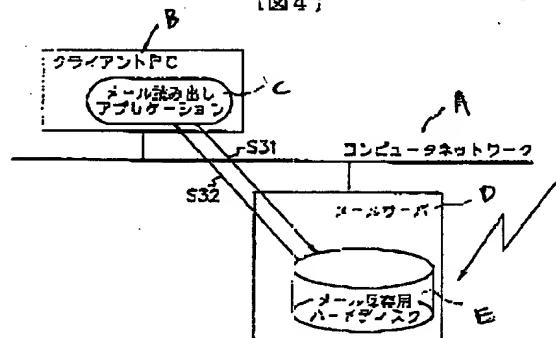
(6)

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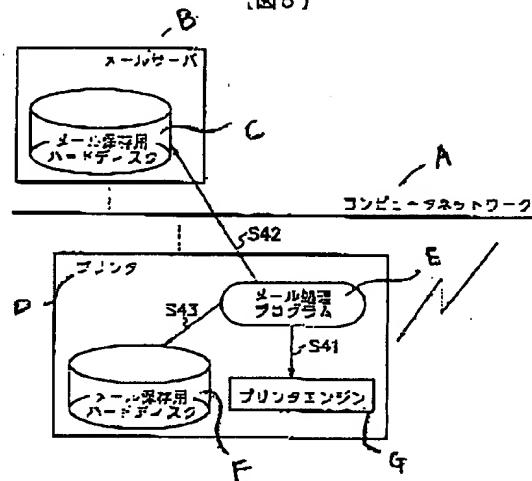
【図3】



【図4】



【図5】



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